



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/928,349

08/14/2001

Joong-Hyun Mun

06192.0263.NPUS00

6679

7590

09/21/2004

MCGUIRE WOODS LLP
1750 TYSONS BOULEVARD
SUITE 1800
MCLEAN,, VA 22102

EXAMINER

NGO, HUYEN LE

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 09/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/928,349

Applicant(s)

MUN ET AL.

Examiner

Julie-Huyen L. Ngo

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-50 is/are pending in the application.
- 4a) Of the above claim(s) 12-48 and 50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-11 and 49 is/are rejected.
- 7) ☒ Claim(s) 10 and 49 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☒ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/30/2004 has been entered.

Priority

Acknowledgment is made of applicant's claim for foreign priority based on the four applications filed in Korea as listed on paper filed 7/30/2004. A correction to reflect the corrected date for document 10-2001-0047318 will be taken place. However, none of the certified copies of these documents have been received.

Response to Arguments

Applicant's arguments filed on July 30, 2004 have been fully considered but they are not persuasive.

Applicant's Arguments with respect to the Restriction Requirement:

1) The Examiner has not set forth how the claims of Groups I-VII are directed towards independent and distinct inventions. Applicants note that the claims of these Groups have disclosed relationships, for example, claims of Groups I and II are directed towards liquid crystal displays.

2) A restriction requirement based on the preamble is clearly improper since the Examiner merely asserts that the preambles are different, thus the claims are directed towards different species, which is materially deficient as it does not show: i) that the species are directed towards different embodiments, ii) that the claims are restricted to species having mutually exclusive characteristics, and iii) that the inventions are independent as required by MPEP§ 806,806.04(e), and 806.044(f).

3) Claims 8-11 and 26-29 should be examined together.

4) The examination of claims of Groups IV-VII with the claims of Groups I-III would not be unduly burdensome to be examined in the present application.

5) The Examiner applies a new election requirement by original presentation, and merely asserts that the preambles of claims 39-46 and 47-50 are different, thus the claims are directed towards different species, which is materially deficient as it does not show i) that the species are directed towards different embodiments, ii) the claims restricted to species by mutually exclusive characteristics, and iii) inventions are independent as required by MPEP § 806.04(e), and 806.04(f).

6) Claim 9 is generic to at least claims 47-50.

7) The Examiner has not set forth how claims 39-46 and 47-50 are directed towards to different embodiments as required by MPEP§ 806.04(e).

Examiner's responses to Applicant's arguments regarding Election and

Restriction requirement:

1) The Examiner has clearly set forth in the previous two Office actions how Groups I-VII are directed towards independent and distinct inventions/species since each of these groups contain claim(s) directed to different invention and/or species that comprise mutually exclusive characteristics, for example, group I (claim 8, figure 4) directed to a **Liquid Crystal Display** (LCD) comprising *a first insulating substrate having a pixel electrode with a first opening pattern, and a second substrate having a common electrode with second opening pattern*; group II (claims 9-11, figure 8) directed to a **color filter substrate** comprising *first and second protrusions having different thickness formed on a common electrode* (See Restriction Requirement included in the previous two Office actions repeated below).

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claim 8, drawn to a Liquid Crystal Display (LCD) comprising a pixel electrode with a first opening pattern and a common electrode with second opening pattern, classified in class 349, subclass 141.
- II. Claims 9-11, drawn to a color filter substrate for a liquid crystal display comprising first and second protrusions having different thickness formed on a **common electrode**, classified in class 349, subclass 106, 110 and 155.
- III. Claims 26-29, drawn to a Thin Film Transistor array substrate comprising an organic insulating pattern *having a protrusion pattern with a first*

thickness, and a flat portion with a second thickness formed on a semiconductor pattern, classified in class 349, subclass 43 and 155.

- IV. Claims 12-19, drawn to a method for fabricating color filter substrate for a LCD comprising a first protrusion with a first thickness, and a second protrusion with a second thickness formed on a common electrode, classified in class 430, subclass 7.
- V. Claim 20, drawn to a method for fabricating a Liquid Crystal Display comprising a thin film transistor array substrate and a color filter substrate, classified in class 430 and 349.
- VI. Claims 21-25, drawn to a method for fabricating color filter substrate for a LCD comprising a protrusion and a polymer pillar of different height/width formed on a common electrode, classified in class 430, subclass 7.
- VII. Claims 30-38, drawn to a method for fabricating Thin Film Transistor array substrate comprising the steps of forming an organic insulating pattern having a protrusion pattern with a first thickness, and a flat portion with a second thickness formed on a semiconductor pattern, classified in class 438.

Inventions of groups IV-VII and group I-III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown:

(1) that the process as claimed can be used to make other and materially different product **or**

(2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)).

In the instant case the products as claimed can be made by another and materially different processes:

The products in group I can be made by another and materially different processes such as etching or patterning.

The product in group II can be made by another and materially different processes such as the processes recited in claims 15, 17 or 19 of group IV, and claim 21 of group VI.

The product in group III can be made by another and materially different processes such as the processes recited in claims 32, 34 or 38 of groups VII.

Further more, the invention as claimed in groups I-III read on specifically different embodiments with mutually exclusive characteristics underlined above in each group.

Applicant was further required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits since this application contains claims directed to the above set forth patentably distinct species of the claimed invention in groups I-III.

2) The Examiner has not merely based on the preamble of the claims but also the whole scope/contents of the claims to apply the restriction requirement, for example, see the different invention and mutually exclusive characteristics noted above in claims 8 of group I, and 9-11 of group II. The invention of group II drawn to a Color Filter

Art Unit: 2871

Substrate while the invention of group I drawn to a Liquid Crystal Display with mutually exclusive characteristics that are not recited in the claims of group II.

3) The restriction is repeated above for clarification and to particularly point out that claims 8-11 and 26-29 are in fact recites the mutually exclusive of characteristics of different species/embodiments, which meet the requirements of MPEP § 806.04(e) and §806.04(f) that states: *"one claim recites limitations which is under the disclosure are found in a first species but not in a second, while the second claim recites limitations disclosed only for the second species and not for the first."*

Applicant is to note the mutually exclusive characteristics recited in claims 8-11 and 26-29, which read on different species of invention since claim 8 directs to a Liquid Crystal Display (LCD) comprising a first insulating substrate having a pixel electrode with a first opening pattern and a second substrate having a common electrode with second opening pattern, while claims 9-11 direct to a color filter substrate comprising first and second protrusions having different thickness formed on a common electrode; and claims 26-29 direct to a Thin Film Transistor array substrate comprising an *organic insulating pattern having a protrusion pattern with a first thickness, and a flat portion with a second thickness formed on a semiconductor pattern*.

Therefore, claims 8-11 and 26-29 should not be examined together since they read on different species of inventions, which meet the requirement in MPEP § 806.04(e), and 806.04(f).

4) Since the inventions of groups I-VII are distinct for the reasons given above and have acquired a separate status in the art as shown by their recognized divergent subject matter, patentably distinct species, and are classified in different classifications, it is burdened on the Examiner to exam ALL Groups of inventions for the reasons set forth above. Moreover, Applicant although traversed, fails to submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case as required in the restriction requirement mailed on September 8, 2003. Therefore, the restriction for examination purposes as indicated was proper and will be maintained.

5) The Examiner has not merely based on the preamble of the claims but the whole scope/contents of the claims 39-50 to apply a new election requirement by original presentation. Such Restriction requirement has been made because Applicant has originally elected the species of group I drawn to a color filter substrate for examination; however, claims 39-46 drawn to a liquid crystal display comprising at least mutually exclusive characteristics, i.e., "*the TFTs, pixel electrode and second insulating substrate*," that were not recited in claims 9-11 and are not even a part of the color filter substrate; Moreover, claims 47, 48 and 50 recited "*a second insulating substrate*" and other features formed thereon that are also not part of the color filter substrate (see color filter substrate 200 in figure 8 of Applicant disclosure).

Thus claims 9-11 and 39-46, 47, 48 and 50 are directed toward different species, which show that i) the species are directed towards different embodiments, ii) the claims restricted to species by mutually exclusive characteristics, and iii) inventions are independent as required by MPEP § 806.04(e), and 806.04(f).

With respect to claim 49, the claim is no longer being withdrawn from consideration since it contains the features that are part of the color filter substrate, and is treated below along with claims 9-11 in this Office action.

6) Claim 9 can not be generic to claims 47, 48 and 50 since these claims recited ***"a second insulating substrate, thin film transistor and pixel electrode,"*** which are not included or part of the color filter substrate (see color filter substrate 200 showed in Applicant's figure 8). One of ordinary skill in the art should have known that a color filter substrate doesn't contain another substrate as recited in claims 47 and 48.

7) In the response to Applicant Amendment of the previous Office Action, the Examiner has set forth how claims 39-46 and 47-50 are directed to an invention that is independent or distinct from the invention originally elected as recited in claims 9-11 (addressed above in response # 5). Therefore, it is no need to show that theses claims are directed to different embodiments as required by MPEP§ 806.04(e) since these claims are not read on the elected species.

Accordingly, newly added claims 39-48 and 50 along with the pending claims 8 and 12-38 are withdrawn from consideration as being directed to a non-elected invention/species. See 37 CFR 1.142(b) and MPEP § 821.03.

Specification Objection

Applicant's requests regarding withdrawal of the objection to claim 10 or the specification as both are in full compliance with 37 C.F.R. j 1 .75(d)(1) have been fully considered but they are not persuasive

Applicant is to note that the Examiner only object to the specification, not the claim. Also the Examiner objected to the specification for failing to provide proper antecedence for the term "one or more" recited in the phrase of claim 10: *"the first and the second protrusions are formed with one or more of a photosensitive organic insulating layer, a photoresist film, and a silicon-based insulating layer".*

Applicant is to review the context of the specification (third paragraph in page 21), which states, *"the organic insulating patterns 160 and 170 may be formed with a photosensitive organic insulating material, a positive or negative photosensitive material, or a silicon-based insulating material."* It is to note that the conjunction term "or" between each of a material means that the patterns/protrusions may be formed of one of the set forth material. Therefore, how can "a" be "one or more" as Applicant alleged?

Specification

The title of the invention as mended is still not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The abstract of the disclosure is objected to because it not clearly states which is new in the art to which the invention pertains as recited in the elected claims.

Correction is required. See MPEP § 608.01(b)

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter recited in claims 1 and 10. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

In claim 1, the recitation calling for "*wherein at least a surface of the first protrusion opposite the insulating substrate is non-conductive*" was not described in the specification.

The specification fails to provide clear and proper support for the limitation recited in claim 10 regarding "*the first and the second protrusions are formed with one or more of a photosensitive organic insulating layer, a photoresist film, and a silicon-based insulating layer*". According to the specification (third paragraph in page 21), which discloses "*the organic insulating patterns 160 and 170 may be formed with a photosensitive organic insulating material, a positive or negative photosensitive material, or a silicon-based insulating material,*" which means that the patterns/protrusions 160/170 can be formed with ONLY one of the material from the group of a photosensitive organic insulating material; a positive or negative photosensitive material; or a silicon-based insulating material. However, the term "one or more" in the context of claim 10 above is calling for more than one of the above-mentioned material.

Claim Objections

Claim 49 is objected to for being unclear of where the third protrusion and a forth protrusion are supposed to be formed on the color filter substrate with respect to the common electrode and the first and second protrusions.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 9-11 and 49 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 17-21 of U.S. Patent No. 6,678,031 B2 in view of Kim et al. (US 6567144 B1) and Murouchi (US 6067144 A).

Although the conflicting claims are not identical, they are not patentably distinct from each other because they are claiming common subject matters except for the common electrode formed of indium tin oxide (ITO) or indium zinc oxide (IZO) recited in claim 11; and the third and forth protrusions recited in claim 49.

However, Song fully discloses in his granted patent that the common electrode is formed of ITO or IZO. Furthermore, Song disclose (figure 11) the third and forth protrusions 116/117 formed on the common electrode 114.

Any features that are not recited in a claim, but disclosed in the disclosure; it is indicated that the features are not critical and essential to the invention.

More over, it is well known and conventional in the LC art for a common electrode be formed of ITO or IZO for having transparency with high conductivity, as evidenced by Kim with an ITO common electrode 13 formed over the color filter 12 having black matrix 11 formed within.

With respect to the third and forth protrusions, it is well known and conventional in the art to have protrusions/spacers of different heights formed on a electrode of a substrate for having a rigid liquid crystal display cell with superior productivity and durability, as evidenced by Murouchi (figure 4).

Therefore, the limitations of claims 11 and 49 are fully meet by Song, or by the teachings of Kim and Murouchi.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Takeda et al (US 6724452 B1) disclose a vertically aligned (VA) liquid crystal display device having protrusions formed on different substrates.

Song et al (US 6657695 B1) disclose a liquid crystal display wherein pixel electrode having openings and protrusions in the same substrate.

Yanagawa et al (US 6583846 B1) disclose a liquid crystal display device with spacer covered with an electrode.


Contact Information

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Julie-Huyen L. Ngo whose telephone number is (571) 272-2295. The Examiner can normally be reached on T-Friday.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's Supervisor, Mr. Robert H. Kim can be reached at (571) 272-2293.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1562.

September 16, 2004



Julie-Huyen L. Ngo
Primary Examiner
Art Unit 2871